

F. L. SAINO.  
FIRE DOOR OR SHUTTER.  
APPLICATION FILED JUNE 8, 1915.

1,204,074.

Patented Nov. 7, 1916.  
2 SHEETS—SHEET 1.

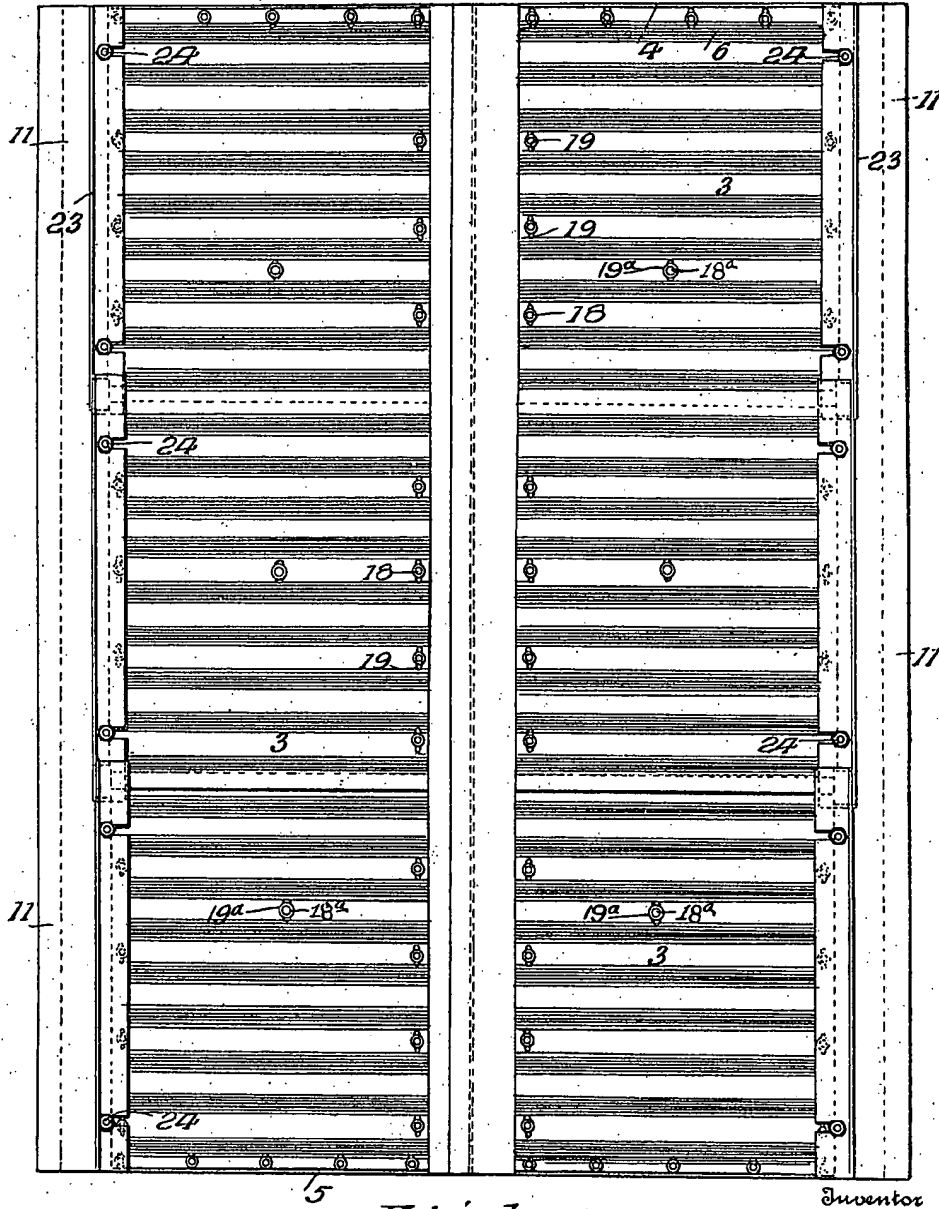
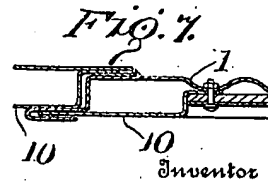
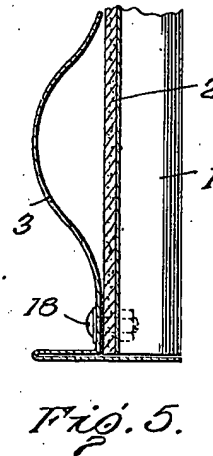
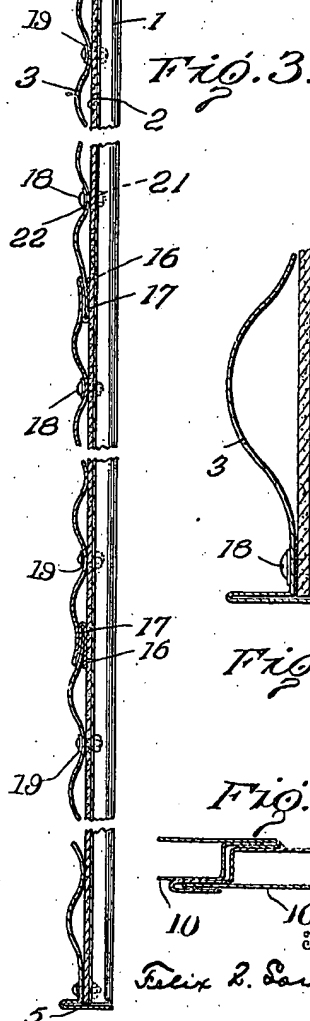
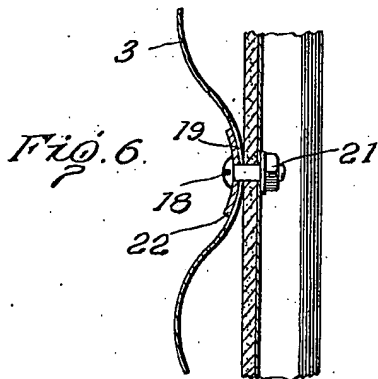
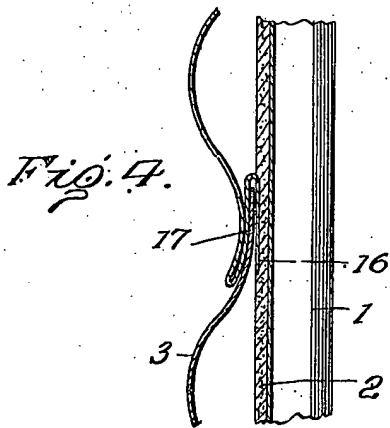
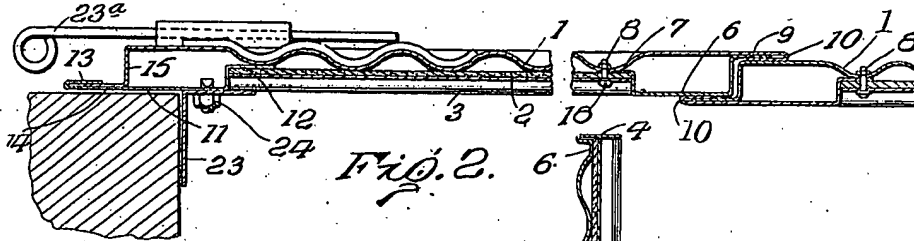


Fig. 1.  
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Witness  
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Inventor  
Felix L. Saino,  
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Attorney

# UNITED STATES PATENT OFFICE.

FELIX L. SAINO, OF MEMPHIS, TENNESSEE.

## FIRE DOOR OR SHUTTER.

1,204,074.

Specification of Letters Patent.

Patented Nov. 7, 1916.

Application filed June 3, 1915. Serial No. 32,948.

*To all whom it may concern:*

Be it known that I, FELIX L. SAINO, a citizen of the United States, residing at Memphis, Shelby county, and State of Tennessee, have invented and discovered certain new and useful Improvements in Fire Doors or Shutters, of which the following is a specification.

The present invention relates to fire-proof doors and shutters and consists in the combinations and arrangements of elements hereinafter described and particularly set forth in the accompanying claims.

The invention has for its purpose to provide a fire-proof door or shutter operable under high temperatures to uniformly expand and effectively close the doorway or window opening and thereby avoid the creation of drafts that necessarily occur when these closures warp or buckle; and one wherein this feature obtains without detriment to the otherwise favorable qualities of these structures.

Another object of the invention is to construct a fire-proof door or shutter comprising releasably connected front and rear walls made up respectively of sheet metal sections having lapped joints to readily allow of uniform expansion of the several sections, and, in addition thereto, to serve as reinforcing elements for the wall fabric.

The invention is shown, in its application to a shutter, by way of illustration in the accompanying drawings, wherein—

Figure 1 is a rear elevational view of the shutters closed, Fig. 2 a top plan view of the same, Fig. 3 a longitudinal sectional view of the shutter, Fig. 4 an enlarged detail view illustrating the lapped joint, Fig. 5 an enlarged detail view of the base of the flue stopper, Fig. 6 an enlarged detail view of the fusible connection, and Fig. 7 a fragmentary sectional view of a modified form of joint in the shutter construction.

Referring to the construction in further detail, each shutter consists of a front wall 1 constructed preferably of corrugated sheet metal, an intermediate sheet 2 of refractory substance such as asbestos, and a back wall 3 of corrugated sheet metal. The walls and the intermediate sheet of each shutter comprise a single unit that is contained within and reinforced by a frame consisting of upper and lower ridge members 4 and 5, constituting "flue stoppers" that are formed

respectively by folding the edges of the sheets after the manner illustrated in Figs. 3 and 5. The side elements of the frame consist of a boxing or strip 6 having a tongue 7 that enters between and is secured to the shutter walls 1 and 3 by the rivets or bolts 8. And said strip 6 is formed with a tongue 9 infolded within the lapped edge 10 of the shutter wall 1. The strip 11 on the opposite side of the shutter is in like manner secured through its flange 12 and has a folded edge 13 securing the tongue 14 of the boxing or extension 15 of the shutter wall 1. In the construction shown in Fig. 7, the edge of the strip 10 forms the tongue and the edge of the wall is folded to provide the tongue-receiving groove.

The shutter walls are each constructed of a plurality of corrugated sheet metal sections whose respective edges are constructed to form tongue and groove elements 16 and 17 respectively, and which are assembled in the manner shown in Figs. 3 and 4. The corrugations of said front and rear walls are disposed in relatively angular relation to the end of obtaining maximum rigidity in structure and to allow of uniform expansion of the shutter as a whole in all directions for the purpose of forming an effective closure with the window or door opening to forestall the creation of drafts that would otherwise occur if the shutter be allowed to warp or buckle. And in this connection, it will be noted that the shutter frame will, in like manner, accommodate itself to such increased dimensions that the shutter walls may take.

The securing means for the shutter walls consists of a plurality of rivets or bolts 18 (see Figs. 1 and 3) that pass through registering slots 19 and 20 formed in the wall sections, and said bolts are secured by upsetting, or with nuts 21. A fusible washer 22 (see Fig. 6) is fitted on each of said bolts and located on the fire side of the structure, *i. e.*, against the rear wall 3 thereof, to the end that the same will melt at a predetermined temperature and release the bolt fastening when the several wall sections may expand and effectively close the window or door opening, in the manner described and for the purpose stated. In constructing large doors or shutters, it is proposed to additionally secure the sections of the front and rear walls thereof by passing bolts or

rivets 18<sup>a</sup> through the central portions of the sheets, and having the fusible washers 19<sup>a</sup> on the inner or fire side, as above.

The flue stoppers 4 and 5 serve to prevent the flame from passing between the walls of the door, and, to avoid the occurrence of drafts and the incident passage of the flame along the hinged edges, "draft plates" 23 are secured to the rear walls 3 by a plurality of screws or bolts 24, or other fastening means, adjacent the hinged edge of the shutter. Said flue stoppers and draft plates form subject matter for separate and co-pending applications bearing the Serial Numbers 30,833 and 33,149, and dated May 27, 1915, and June 9, 1915, respectively.

The shutters are designed to be mounted on special types of hinges 23<sup>a</sup> and for which applicant has pending an application for United States Patent, bearing the serial Number 30,611, and dated May 26, 1915; and the shutter frame portions 10 form complementary engaging elements necessary to provide a perfect closure along the central middle line of the window.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of the invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a fire door or shutter, the combination of a supporting structure, a wall constructed of corrugated sheet metal sections provided with slots, said sections constructed each with a folded edge providing a groove and a straight edge forming a tongue, said tongues of the sections fitting within the grooves of their respective adjacent sections and forming slip joints therewith, members passing through said slots and the supporting structure and securing the sections to said structure, and fusible washers on said members operable to release

the same and allow the separate sections of said wall to expand independently, substantially as set forth.

2. In a fire door or shutter, the combination of a front and a rear wall constructed of corrugated sheet metal sections having registering slots, said sections constructed each with a folded edge providing a groove and a straight edge forming a tongue, said tongues of the sections fitting within the grooves of their respective adjacent sections and forming joints therewith having clearances for relative movement of the joint members, members passing through said registering slots and securing said walls together, and fusible washers on said members operable to release the same and allow the separate sections of said walls to expand independently, substantially as set forth.

3. In a fire door or shutter, the combination of hingedly mounted parts each constructed of a front and a rear wall comprising sheet metal sections having registering slots and formed each with a folded edge providing a groove and a straight edge providing a tongue, said tongues of the sections fitting within the grooves of their respective adjacent sections and forming joints therewith having clearances for relative movement of the joint members, said sections constructed with boxings at the respective adjacent edges of the door parts and said boxings forming opposed flanges to provide a lapped joint between said parts, members passing through the registering slots of the sections and securing the walls together, and fusible washers on said members operable to release the same and allow said walls to expand, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Memphis, Tennessee, this 19th day of May, A. D. nineteen hundred and fifteen.

FELIX L. SAINO. [L. S.]

Witnesses:

JOHN L. STOUT,  
JOHN W. FARLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."